THE UPCOMING INDUSTRIAL BOILER & PROCESS HEATER MACT STANDARD

A&WMA MACT Web Conference

May 20, 2002

Status of Industrial Boiler MACT

- **Source categories included:**
  - **Industrial Boilers**
  - **Institutional/Commercial Boilers**
  - **Process Heaters**
- **Major source MACT only**
- **Subcategorizing by fuel type, size, and use**

Major Source

- **".. Any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in aggregate, 10 tons per year or more of any hazardous air pollutants or 25 tons per year or more of any combination of hazardous air pollutants…"**

- **The boilers or process heaters themselves do not need to be a major source of HAP**

What is a Process Heater?

- **Process heater means an enclosed device using controlled flame and the unit's primary purpose is to transfer heat indirectly to process stream materials (liquids, gases, or solids) or to a heat transfer material for use in a process unit, instead of generating steam. Process heaters are devices in which the combustion gases do not directly come into contact with process gases in the combustion chamber.**

- **Only those combustion units that meet this definition will be considered a process heater for the purpose of the Industrial Boiler and Process Heater MACT.**

Industrial Boilers plus Process Heaters ?

- **Boilers and "indirect-fired" process heaters are similar combustion devices**
  - Combust similar fuels to heat water (steam) or other materials
  - Both transfer heat indirectly
  - Fuel-related emissions are the same
  - Organic HAPs are similar

Potential Affected Existing Sources

- **Total: 57,000 units (42,000 boilers, 15,000 process heaters)**
  - 2,500 coal-fired units
  - 46,800 gas-fired units
  - 700 wood-fired units
  - 6,000 oil-fired units
  - 1,200 mixed fuel-fired units
- **Based on size or co-location**

Emission Controls

- **Various controls & combination are used**
- **Metals and particulate matter**
  - Fabric filters, ESP, scrubbers
- **Acid gases (HCl)**
  - Scrubbers (wet or dry)
- **Mercury**
  - Fabric filters
- **Organic HAPs (dioxins, formaldehyde)**
  - CO monitoring and limit

Databases

- **Inventory database (fossil fuel)**
- **Survey database (nonfossil fuel)**
- **Emission database**
- **Can be downloaded from EPA's website at:**
  - www.epa.gov/ttn/atw/combust/iccrarch/iccrarch.html
  - Microsoft ACCESS is the database software

What units will the MACT cover?

- All industrial boilers located at major sources
- All commercial and institutional boilers located at major sources
- All process heaters located at major sources

What units will the MACT not cover?

- Fossil fuel-fired electric utility boilers
- Boilers burning municipal waste
- Boilers burning hazardous waste
- Boilers burning medical waste
- Black liquor recovery boilers
- Hot water heaters
- Waste heat boilers

Preliminary Subcategories

- **Three main subcategories based on fuel type:**
  - Solid fuel-fired units
  - Liquid fuel-fired units
  - Gaseous fuel-fired units
- **Additional subcategories**
  - to analyze impacts on small businesses
  - Subcategories based on size
    - Large (Greater than 10 MM Btu/hr heat input)
    - Small (Less than 10 MM Btu/hr heat input)
  - Subcategories based on use
    - Limited-use (less than 10% capacity factor)
- **Total of 9 subcategories**

MACT Floor - Existing Units

- **Control technology basis for preliminary MACT floors for existing sources**
  - **For solid fuel boilers**
    - Large units -- Baghouse (metals)/ scrubber (HCl)
    - Small units -- No Floor
    - Limited-use Units -- ESP
  - **For liquid fuel units -- No Floor**
  - **For gaseous fuel units -- No Floor**
- **MACT floors are actually emissions levels**

MACT Floor

- **For existing sources:**
  - "The average emission limitation achieved by the best performing 12 percent of existing sources.."
- **For new sources, the MACT floor is:**
  - "The emission control achieved in practice by the best controlled similar source…"

MACT Floor - New Units

- **Based on NSPS and state regulations**
- **Solid and Liquid fuel units**
  - Large units -- Baghouse/scrubber/CO limit
  - Small units -- Baghouse/scrubber
  - Limited-use Units -- Baghouse/scrubber/CO limit
- **Gaseous fuel units**
  - Large/limited use units -- CO limit
  - Small units -- No Floor
- **MACT floors are actually emission levels**

Preliminary MACT Floor Levels

- **Based on review of emission database**
- **Existing large solid fuel-fired units**

  PM -- about 0.07 lb/million Btu

  HCl -- about 0.09 lb/million Btu (90 ppm)

  Hg – about 4 lb/trillion Btu
- **New large solid fuel-fired units**

  PM -- about 0.01 lb/million Btu

  HCl -- about 0.02 lb/million Btu (20 ppm)

  Hg – about 1 lb/trillion Btu

  CO – 400 ppm @ 3% oxygen

Preliminary MACT Floor Findings

- **Estimated annual costs to meet existing MACT floor emission levels**
  - 30 million Btu/hr wood unit/cyclone = $100K(ESP)
  - 180 million Btu/hr wood unit/cyclone = $300K(scrubber)
  - 54 million Btu/hr coal unit/cyclone = $250K(venturi)
  - 600 million Btu/hr coal unit/baghouse = $500K(scrubber)

Provisions Being Considered

- **Alternate metal standard**
  - minimize impacts on small businesses
  - sensitive to sources burning fuel with little metals, but emitting PM to require control
  - sum of 8 selected metals: arsenic, beryllium, cadmium, chromium, lead, manganese, nickel, and selenium
  - Facility could elect to comply with either the PM limit or the alternate metal standard

Industrial Boiler MACT Schedule

- Proposal in August 2002
- Promulgation in November 2003

INFORMATION AND CONTACT

- **Information on the MACT rulemaking for industrial, commercial, and institutional boilers and process heaters is available on EPA's web site at:**
  - www.epa.gov/ttn/atw/combust/list.html
- **Contact:**
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